Chapter 3: Capitalizing on Lessons Learned for Cleanup Actions

As the heart of Superfund, the response program houses the staff and the resources needed to clean up sites, including both short-term removal actions and longer-term cleanups, known as remedial actions. Both parts of the response program have evolved to meet an ever-changing list of Superfund sites, ranging from drum disposal sites to landfills, abandoned smelters, and hard-rock mining sites. Today, in addition to conducting removals at National Priorities List (NPL) sites and traditional emergencies, on-scene coordinators (OSCs) are responding to events like the anthrax contamination on Capitol Hill or the *Columbia* Space Shuttle incident. Remedial project managers (RPMs) must also be prepared to handle new contaminants that have never been encountered on a site before, along with more common sites such as landfills, abandoned chemical plants and pesticide manufacturers.

The following discussion covers the different facets of the response program. Many of the recommendations are designed to build on the past success, experience, and lessons learned over Superfund's two-decade history. For example, increasing in-house work or reexamining the records of decisions (RODs) for certain sites are two recommendations that depend upon a mature response program. The ultimate success of several of these recommendations is assisted by a series of cost management initiatives that have already been initiated by the Office of Solid Waste and Emergency Response (OSWER). OSWER's initiatives include updating the National Remedy Review Board (NRRB) policy to expand the scope of the NRRB and encouraging the Regions to do more value engineering during site design. This study recommends very similar reforms.

Using the NPL as an Incentive for Voluntary Cleanup Work

In light of funding shortages for long term cleanups for existing NPL sites, there has been discussion in recent years that reducing the number of NPL listings is necessary in order to focus resources on existing sites. Much attention has also been given to maximizing the use of other state and federal cleanup authorities. While this is a sensible way to manage the program, most of the leaders interviewed who are involved with Superfund program implementation insist that the need to list sites on the NPL continues. Knowledgeable practitioners across the entire spectrum interviewed by the study team maintain that the legitimate potential of NPL listing encourages potentially responsible parties (PRPs) to clean up sites under various state and federal programs. Without this leverage, state Superfund and voluntary cleanup programs are less effective, and where PRPs are unwilling to step forward, sites can still be cleaned up by EPA.

Recommendation 23: OSWER should maintain a sufficient rate of listing on the NPL to function as an incentive for PRPs to perform work under the Superfund program as well as other programs or authorities. NPL listing is needed to relieve pressure on EPA response funds by ensuring that PRPs fund work that is needed sooner rather than later. (Long term)

Using Fund-Lead Work as an Enforcement Lever

Modest but meaningful investment in Fund-financed remedial investigation/feasibility studies (RI/FSs) in certain situations at NPL sites encourages PRPs to do the up-front studies and conduct subsequent remedial actions. Experience shows that in circumstances where PRPs are actively resisting doing work at a site, allocating some funds to enable EPA to conduct RI/FSs actually increases PRP participation overall. Greater PRP participation reduces the need for Fund-financed responses by EPA. Such an approach allows the Agency to deal swiftly and early with recalcitrance, sets the tone for later activity, and ensures there is no reward to PRPs for waiting for EPA to do the work.

When given a second chance after initially declining the opportunity to participate in—and thus help shape—site work, many PRPs reassess the potential benefits of conducting the remedy. They believe that they can perform the construction faster and more cost effectively than the government, and that they have greater control over the outcome. Because the Agency can recover its costs plus treble damages for any work it performs, knowing that EPA can and will conduct the work encourages activity and funding by PRPs. This is true not only prior to listing, but also increases the likelihood of PRP participation throughout the remedial process once a site is listed. PRP involvement historically tends to increase as projects move through the cleanup program. This may be due to a greater knowledge of the status of PRPs and/or the increased certainty once the remedy is selected.

Recommendation 24: While continuing to stress early PRP search activity and maximizing PRP involvement, OSWER should continue to target funds for Regions to begin RI/FS work early where PRP recalcitrance is evident. (This is analogous to the process used for remedial action funding.) (Near term)

Pursuing the Superfund Alternative Sites Approach

Under the Superfund Alternative Sites approach, EPA oversees PRP response actions at sites that are eligible for NPL listing but not listed. The benefits of this approach are prompt cleanup of high-risk sites, reduced need for EPA funding, and savings in time and energy otherwise required for site listing. Nevertheless, EPA still expends resources for oversight and, in many cases, for some of the site characterization (RI/FS). Such use of resources may take assets from NPL cleanups in the Region or elsewhere in the country. Moreover, because the Alternative Sites have not been subjected to any national priority ranking process, EPA generally has not demonstrated clearly the appropriateness of

addressing Alternative Sites relative to funding work at existing NPL sites. Superfund managers are quick to acknowledge the potential benefits of a properly formulated and managed Superfund Alternative Sites policy, but stress the need to ensure effective resource use by explicitly balancing the risks across the universe of NPL and non-NPL sites.

Currently, Regions vary in their use of Superfund Alternative Sites. Some promote the approach strongly, while others view it cautiously or find it too confining to be worth pursuing. PRP groups support some sort of alternative to the NPL, but because the current Superfund Alternative Sites approach closely mirrors the National Contingency Plan process with little perceived benefit to them, they do not support it enthusiastically. Among the criticisms heard during interviews were a lack of transparency on site assessment and information on pre-scoring, and inconsistency among Regions, leading some interviewees to characterize the approach as being subject to abuse. From their perspective, at least an NPL site goes through rigorous quality control and due process before listing. Many believe that clearer expectations and criteria should be established nationally for Superfund Alternative Sites.

Table 2: Percentage of NPL sites that are construction complete in a Region vs. number of Superfund Alternative Sites

Region	NPL listings as of 3/11/04*	CC as of 12/4/03	% of sites completed	# of SAS initiated as of 11/2003
1	112	53	47	1
2	262	120	46	8
3	206	119	58	1
4	210	128	61	20
5	300	221	74	39
6	120	65	54	6
7	81	43	53	16
8	67	26	39	9
9	126	55	44	0
10	99	60	61	9
total	1583	890	56	109

*Listing includes proposed, final and deleted

Beyond or instead of the formalized Superfund Alternative Sites approach, some Regions engage in work at other sites that are not listed on the NPL. For instance, on occasion a community may come to a Region with strong concerns about a state's performance at a site under its state Superfund program. The site may or may not qualify for the NPL, but the Region may deem it appropriate to invest significant remedial project manager (RPM) and other technical oversight resources to track the state's work and ensure community

concerns are being addressed. Some Regions consider having this kind of discretion important for the program's overall effectiveness and responsiveness.

Recommendation 25: OSWER should revise the Superfund Alternative Site policy to ensure that criteria for being a Superfund Alternative Site are uniform and that the Regions provide the PRPs and other interested parties with transparent site assessment and pre-scoring information. (Near term)

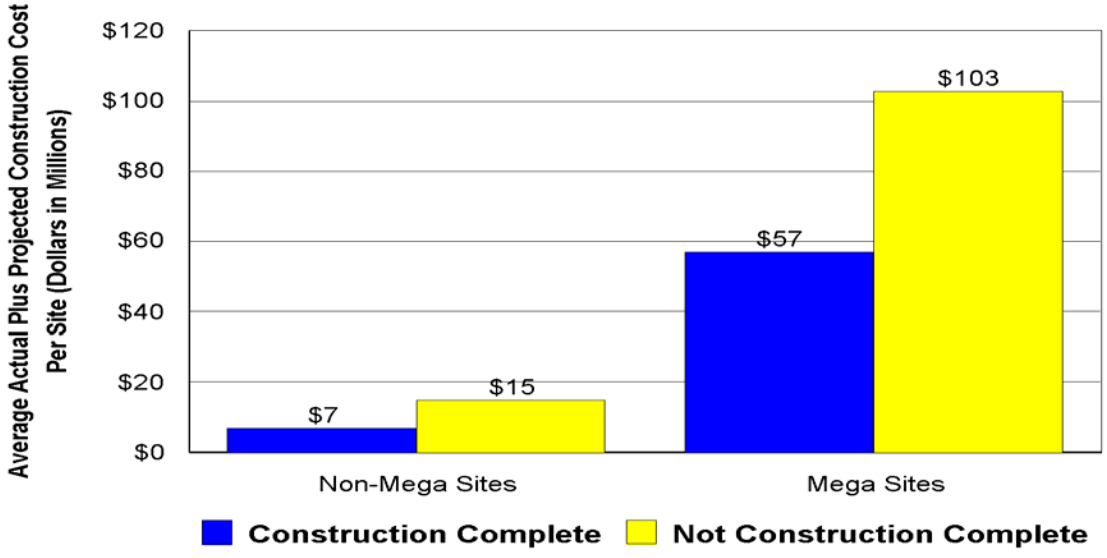
Recommendation 26: The Regions should establish and implement a process by which Superfund alternative sites are prioritized along with their NPL sites to ensure that response funds are being spent on the sites with the highest risk. Working on Superfund Alternative Sites would depend on the needs of, risks from, and progress on existing NPL sites. (Near term)

Recommendation 27: OSWER and the lead Region should work together to ensure all site cleanup work (including work completed under the Alternative Site program) is tracked and reported internally and externally to ensure the accomplishments of the national program are appropriately communicated to the public and Congress. (Long term)

Defining the Scope of Mega Sites Specifically and Early

When the Agency embarks upon listing a particular site on the NPL, the true scope of the problem often is not clear, particularly for potential mega sites. The risk to the program is that a relatively small number of very large and/or costly sites can encumber a significant percentage of the Agency's remedial action budget for many years to come.

Figure 2: Cost of Remaining Fund-Lead NPL Sites vs. Cost of Completed Sites



IFMS and FY 2003 CERCLIS Obligation Data for End of FY 2002
Costs Not Adjusted for Inflation

Several program managers discussed the need to establish the true scope of such sites more specifically as early in the process as possible. This could occur during the site assessment process or soon after NPL listing, especially where the cost to address all sources of risk may be beyond the program's resources. The longer the scope of such sites is left undefined (and therefore left broad by default), the greater is the likelihood that high expectations for a more expansive characterization and cleanup will arise and become solidified. Early attention is needed to ensure EPA makes well thought-out decisions about the scope of its intended remediation early enough in the response process to reduce the prospect of creating unachievable public expectations, and committing resources to relatively lower-risk problems at the expense of delayed response to higher-risk sites.

Recommendation 28: OSWER should work with the Regions to establish a process for national review of the scope of potential megasites at the time of listing to ensure that sites are properly characterized as early as possible so that out year funding needs can be more accurately forecast as part of the development of the President's budget. This process should also institute an approach to monitoring changes in the scope as the characterization work proceeds. (Long term)

Integrating Site Assessment Programs

With the creation and rapid growth of EPA and state Brownfields programs, issues have been raised about whether the Superfund site assessment program warrants changes. Is there still a need for the number of NPL listing-oriented assessments that are being conducted, given the site assessment program under the Brownfields program? Could the two site assessment programs work together in a more complementary way to enhance program effectiveness and reduce costs? If so, how?

Another area where better integration would be beneficial is prior to NPL listing. When RI/FS work and "enforcement first" activities can proceed prior to NPL listing, the Agency can make progress at sites much more quickly. For example, data gathering that is planned and conducted with a view not simply to listing the site but also to selecting a remedy represents a more efficient use of resources. To the extent the program gathers more of the necessary data the first time, it can speed up work on the site much more quickly and address site risks or other community concerns. The art lies in discerning likely NPL sites early enough in the pre-remedial stage to judge where to invest the additional resources sooner than would be typical. In an effort to do this, some Regions use a team approach for certain sites so that site assessment managers (SAM) and RPMs develop the data they need concurrently. In other Regions, the states do all of the site assessments and have integrated voluntary and traditional site assessment programs.

Best Practice: In Region 4, EPA and the state of South Carolina meet on a quarterly basis to assess all of the hazardous waste sites in the State, both NPL and non-NPL and jointly decide what are the most efficient methods to achieve clean up. Based on skills, capacity, and funding, the State and EPA decide who and how each site will be managed. By including good business principles in their joint decisions, sites are cleaned up with

timeliness and efficiency. Other Regions use a similar approach with some of their states.

Recommendation 29: OSWER should examine its site assessment criteria to ensure that the Regions are integrating the Brownfields site assessment objectives into the Superfund site assessment process in order to capitalize on potential programmatic efficiencies and resource savings. The Regions should continue to coordinate grant funding for site assessment work under the Brownfields program and state programs. (Near term)

Recommendation 30: The Regions should continue to make a standard practice of integrating site assessment work more fully with early-stage remedial work to expedite remedial activities and save resources. At the regional level, give greater support to the use of SAM/RPM teams in order to move targeted pre-NPL sites more quickly and appropriately into the remedial pipeline. (Near term)

Recommendation 31: OSWER should encourage more Regions to adopt the best practice (or "one list") approach to help ensure that the collective resources of EPA and the states are being utilized to achieve the greatest benefits. (Near term)

Expediting Cleanups Using Removal Program Authorities

The Agency has made substantial progress in encouraging the use of removal and remedial tools to address sites. Nevertheless, while the appropriate and judicious use of removal authorities can expedite cleanups at NPL sites or prevent sites from reaching the NPL, the Agency's current management and accountability systems and methodology for reporting to Congress do not fully recognize these benefits. Current performance measures do not track the combination of these activities, nor do they allow the Agency to take credit for the results of good intra-program management and coordination. For instance, when a removal at an NPL site addresses longer-term remediation goals, it is reported as a removal, and the dollars spent are not counted toward the totals spent for remedial actions. The reporting and "credit" gap is particularly notable when the removal program assists in achieving key outputs, such as completing construction at a site, or when a removal addresses the entire site and NPL listing is not necessary. In such cases, the Agency needs to consider how the significance of this work can be tracked and accounted for better.

To realize more fully the potential benefits of removal actions at NPL sites, the Agency may need to further reduce the organizational and procedural barriers to a cohesive team approach between removal and remedial programs. As stated in *Chapter 2: Improving Superfund Program Integration and Communication*, the funding categories currently used create impediments and may limit the Superfund program's ability to respond quickly and efficiently. For example, at a site where the remedy is obvious, such as a residential lead soil removal, the actual work may be accomplished more efficiently using removal authorities. Current policy limits to $6 million the amount of funding spent on a site under the removal program. This may limit the scope of what the Agency can accomplish quickly and efficiently.

In cases where the cleanup methodology is known based on experience, the additional time and resources spent to list a site on the NPL may not be warranted. Moreover, communities may have a preference to have a site addressed without NPL listing. Across the country there appear to be divergent approaches to this issue. Some Regions prefer to list a site, while others see greater benefits in cleaning sites up through the removal program. National leadership is needed to maximize and balance the benefits of the removal and remedial programs coherently.

One current disadvantage of removals is the lack of state matching funds. Region 6 has adopted the practice of pursuing a 10 percent state cost share for removals that are not time critical. This approach ensures coordination of priorities with state counterparts and reduces the potential for appearing to circumvent the 10 percent cost share requirements of remedial actions. However, there is no statutory or regulatory requirement for this cost sharing, even though in such a circumstance it seems both fair and reasonable.

Recommendation 32: Since some sites have high risks but do not require an extensive study, OSWER should clarify the process for obtaining an exemption to the current dollar limit for cleanups under removals or re-circulate the current guidance. (Near term)

Option 1: To capture the benefits of removal program activities, OSWER should consider developing new ways of tracking and reporting removal actions. This would include work that (1) speeds cleanups at NPL sites and (2) completes cleanup of a site that typically would be listed on the NPL. (Near term)

Option 2: OSWER should explore adopting a consistent national approach that encourages Regions to ask states for a 10 percent cost share for non–time-critical removals to ensure buy-in from states on priority cleanups and to conserve federal resources for use at other high-priority sites in the Region. (Long term)

Balancing Competing Priorities with Homeland Security

Much of the same workforce that responds to emergencies and oil spills and conducts time-critical and non–time-critical removals also supports important homeland security responsibilities. Some of the interviewees stated that On-Scene Coordinators (OSCs) are being pressed into action for homeland security preparedness and response activities, taking time away from classic emergency response and removal activities. The affected Regions also noted that when multiple events of national significance occur, the removal program in the affected Region virtually shuts down. In addition, there is an impact on the removal program nationwide as supporting Regions send OSCs to assist in staffing the events.

During this same time, five additional staff positions were given to each Region to compensate for the increased homeland security workload. While large national incidents have virtually depleted some Regions of their staff, much of the actual costs of the incidents has been reimbursed. (The costs of responding to the World Trade Center,

Capitol anthrax problem, and the space shuttle *Columbia* were all reimbursed). In recognition of this depletion of staff at the time of an event, the Regions have begun to develop a response corps that draws on the expertise in other programs (e.g., RPMs, Resource Conservation and Recovery Act (RCRA) corrective action staff, and drinking water staff). Although contract money and additional staff have been provided to the Superfund program for homeland security, the Regions have stated that they have not been funded adequately for the training, equipment, and travel needed for the response capability expected of the Agency as specified in the Federal Response Plan. EPA has to prepare for its expanding role in preparedness for counter terrorism response and Homeland Security such as development of Continuity of Operation Plans and continuity of Government functions.

Recommendation 33: The Agency needs to find a permanent fix for the high-priority funding needed for the 50 homeland security FTEs that the Regions were required to hire. One approach is over the next two years, the Administrator could reduce the Superfund FTE in headquarters offices (excluding OSWER) to obtain the necessary funding for the 50 Regional homeland security FTE. (OSWER has already redirected 5 FTEs to support this effort). (Long term)

Recommendation 34: As part of the next budget process, the Agency should evaluate whether, above and beyond the initial FTE, the Agency needs more dollars and FTE to prepare for nationally significant incidents. (Long term)

Recommendation 35: Building upon the development of the Regional Response Teams, OSWER and the Regions should support more cross training among OSCs, RPMs, and SAMs to support removal efforts while OSCs are addressing nationally significant incidents. (Near term)

Preventing Potential Future Superfund Sites

During the more than 20 years of the Superfund program's existence, more than 7,000 removal actions have been conducted. There now should be sufficient data to perform a historical analysis of these actions to determine if any patterns are apparent. For example, are particular types of industry or businesses are more likely to require a removal action (or be listed on the NPL)? If certain categories repeatedly require removal actions, the Agency should evaluate what, if any, changes should be made to regulations, policies, or guidance.

Recommendation 36: OSWER should conduct an evaluation of historical removal actions to determine whether patterns exist in certain industries (Standard Industrial Classification codes). If the evaluation reveals that certain industries repeatedly end up on the NPL, the effort could go on to identify available or needed mechanisms by all authorities to address recurring issues. (Near term)

Examining the Role of the National Remedy Review Board and the Cost of Site Work

The selection of high-dollar remedies lead to the formation of a National Remedy Review Board (NRRB). While the board has reduced the cost of newly selected remedies, interviewees believe greater savings could be achieved if the board reviewed a broader universe of sites and site remedies. In addition, after remedies are selected (with or without NRRB review), selected remedies are not revisited to monitor the success and cost of their implementation. Sites that are reviewed by the board are not analyzed with an eye as to whether the remedy is being implemented in the most cost-effective manner. Both OSWER and the Study Team are examining the role of the NRRB; both groups appear to be reaching similar conclusions.

One common practice utilized by the construction industry to achieve greater cost efficiency is value engineering during the design stage. What value engineering adds to the process is a third party review of the detailed design to determine if there are any ways to accomplish the same goal at a lesser overall cost. The Superfund program has at times used value engineering, but it's application is made much more complex by the statutory requirement to comply with all applicable and relevant and appropriate requirements (ARARs). These ARARs, particularly those which are only relevant and appropriate, often add cost to the remedy which a value engineering review quickly highlights as unnecessary. The selected remedy is required by law to meet these requirements. This makes the use of value engineering at Superfund site, while potentially helpful, very difficult to achieve in practice.

A mid-process review of costs can optimize long-term response actions and thus reduce costs. The initial Pump-and-Treat "Optimization Reviews" have been well received by both EPA and the states, and there appears to be value in expanding the expectation for these project reviews. Lessons learned in one Region or at one site need to be shared across the nation so that the same benefits can be realized across the program as quickly as possible.

The NRRB serves in an advisory nature to the Regions, per the charter, and submits recommendations for consideration. These recommendations are often incorporated into the remedy, but are at the discretion of the Regions. Comments were received that suggested there should be consultation with OSWER when a Region deviates from the board's recommendations.

Recommendation 37: The work of the NRRB has resulted in reduced costs for selected remedies. OSWER should re-evaluate the criteria for identifying sites for scrutiny by the Board, with an eye toward expanding the number of sites undergoing review. One approach for expanding the number of sites may be to lower the estimated remedy cost threshold, while another may be to look at factors beyond a cost threshold, perhaps to include technology types, site uniqueness factors, or issues of national significance. (Near term)

Recommendation 38: Since the recommendations of the NRRB are optional for the Regions to implement, the charter of the board regarding accountability for implementing its recommendations made to the Regions should be revisited in light of the maturation of the program and the board's changing role. (Long term)

Recommendation 39: To ensure cost-efficient engineering of remedies, OSWER should require value engineering (review of design detail for cost efficiency) as a requirement for all remedies above a certain dollar level. As an example, particular attention should be paid to the energy and staffing costs of various designs for groundwater pump-and treat facilities. (Near term)

Recommendation 40: OSWER should consider cost reviews of every site with a long tem response action (LTRA) to reduce remedy costs. Cost saving approaches should be shared across the regions. (Long Term)

Reviewing Specific Records of Decisions

One of the most significant decisions that the Agency makes in cleaning up a site is the remedy selection. Some sites with remedies selected many years ago, prior to Remedy Review Board and other Superfund remedy reforms, have not been constructed. New technology and experience may warrant a different, more efficient cleanup approach. At PRP-lead sites, remedy modifications have been common because the PRPs have great incentives to consider and evaluate potential cost efficiencies that achieve cleanup goals. Many EPA project and program managers have not perceived the same incentives to re-evaluate selected remedies at Fund-lead sites.

Now, as budgets have become tighter, looking closely at selected remedies and considering appropriate updates is a potentially critical activity. (Time and resources would have to be invested to review and, where appropriate, update decisions.) Some individuals are concerned that states and communities would object to revisiting the ROD (re-ROD) at a site. While this objection has not surfaced in the vast majority of re-RODs for PRP-lead sites, potential community opposition and state resistance to re-RODs are definite disincentives to considering remedy revisions. Some individuals are concerned that re-RODs generally will result in additional dollar needs for sites. Although higher costs certainly are a possibility, after a review of approximately 30 RODs, Region 5 reported a small number of those resulted in higher costs. This is another area that OSWER has been reviewing as part of their cost management initiatives.

Recommendation 41: OSWER should set up a review team of headquarters and regional staff to make sure that the selected remedies at sites incorporate new technology and the most cost-efficient cleanup approach based on experience since the remedies' selection. This team could be similar to the priority panel. (The priority panel consists of program experts who evaluate the risk at NPL sites with respect to human health and the environment in order to assist the Agency in establishing funding priorities for all new cleanup construction projects in the Superfund program.)

Possible approaches could include: (1) examining sites that are close to completion to see if the remedy for the final operable unit needs to be revisited; (2) examining sites where the ROD designated particular technologies that have improved and have become more cost-effective since the ROD was signed; and (3) look at sites where the ROD was signed more than five years ago and has not been implemented. (Near term)

Establishing National Standards and Action Levels

The Regions spend a significant amount of resources developing site-specific risk assessments and remedies. Some sites, however, may lend themselves to a more streamlined/standardized methodology for response decisions and cleanup. National action levels for cleanup may be one option for ensuring greater consistency nationally and conserving risk assessment resources, although some flexibility should remain for site-specific situations and innovative approaches.

Option: Headquarters and the Regions should identify the five or ten contaminants most commonly encountered in soil and sediment at sites across the country in order to conserve resources and utilize the experience and risk information developed since the inception of the Superfund program. They could also convene a workgroup to evaluate the efficacy of various approaches to promote greater consistency in establishing action levels for these contaminants, including the option of establishing a limited number of national standards. (Long term)

Using Presumptive Remedies and Generic Designs

The Agency has made strides in identifying and providing guidance on presumptive remedies that save time and money in the study phases. The presumptive remedies do not preclude the need for an RI/FS and a ROD, but they do reduce remedy costs. The process still requires time and money to select obvious remedies, such as caps for landfills, rather than going directly to design. The Agency could take the next step to moving more quickly to design and construction by more fully using generic or tested designs that can be shared among similar sites with relatively little modification. For such remedies as the removal of volatile organic compounds from groundwater, instead of the current approach to develop a unique design for each site, the Agency could develop some standard designs that can be adapted to a particular site, water chemistry, and suite of chemicals. The current process pays for the same design (or variations of it) repeatedly, which does not seem to be the most cost-effective approach.

Option 1: To determine how the Agency has historically developed presumptive remedies, OSWER or the Regions should conduct a lessons learned analysis of how previously identified presumptive remedies were developed and disseminated and determine if those lessons learned can help today. (Long term)

Option 2: OSWER should expand presumptive remedy guidance to include more detailed technical designs to speed cleanup and reduce study and design costs. (Long term)

Recommendation 42: OSWER and the Regions should identify a limited number of common site types and successful designs, and make them available to the Regions for remedies at similar sites. They should also set high expectations for contractors whose reliance on these designs is expected to reduce the time and cost of design work. (Long term)

Choosing a Funding Mechanism and Providing Oversight

To clean up a site, the Agency has four options: (1) use a current EPA contract, such as a remedial action contract; (2) award a new site-specific contract; (3) enter into an interagency agreement (IAG) with another federal agency; or (4) award an assistance agreement to a state. When selecting a mechanism, EPA should take into account the needs of each particular site, the available capacity for the work, the capability of the provider, and the overall cost of the various approaches. Recent data suggest that Regions are using all these options. In FY 2003, the Agency obligated approximately 56 percent of its remedial action funding to IAGs, 36 percent to contracts, and 8 percent in grants to states.

In many Regions, it appears that RPMs decide whether an IAG, contract, or grant will be used to clean up a site. Because of the importance of this decision to the total cost of a site and the effect on many other areas including regional contract capacity and state relations, many interviewees suggested that senior regional managers should be more consistently involved in this selection decision. By approaching these decisions from a broader perspective, managers can fully consider how to best use limited Superfund resources while at the same time address the needs of a site.

In addition, several interviewees felt strongly that to keep costs of construction under control, it is important that RPMs actively monitor construction at their sites. By visiting the site regularly, the RPM can determine first hand how the work is being conducted, and will be better prepared to deal with any cost or work issues raised by contractors or personnel from other federal agencies. Without this regular site presence, the RPM could be dependent on the contractor or personnel from the other federal agencies for information on site conditions and issues, and it could appear that either the contractor or another federal agency, rather than EPA, is responsible for the site work. Field oversight work cannot be entirely delegated to organizations outside EPA if the Agency is to ensure maximum project management and cost efficiencies.

EPA is now closely scrutinizing its limited remedial funds; the study team is recommending that EPA evaluate its existing agreements with other Federal agencies involved in remedial work to re-examine the associated costs in order to seek out greater efficiencies. A recommendation is also being made to look at existing clean up contracts to explore other types of contracts which could result in greater cost efficient remediation. These recommendations and corresponding discussions appear in the Optimizing the Use of Superfund Dollars Chapter.

The States have played a vital role in Superfund since the program's inception, and that role has changed and fluctuated over time. States have also played a major part in setting clean up standards for Superfund sites. In addition, state staffs have taken the lead on community relations at many sites. The listing and non-listing of NPL sites has been greatly influenced by states and they have put forth additional state funds, beyond their 10% share, in cleaning up sites.

States have desired varying degrees of independence in the implementation of the program. Many states now have their own Superfund or hazardous waste programs. EPA established a grant program to build state Superfund capacity. However, even with this funding, states vary tremendously in their capacity to clean up and manage waste sites. Some are national leaders while other states, often due to budget decisions and programmatic choices, have little or no response capability. Likewise, EPA has seen varying degrees of success when states serve as the lead Agency for NPL remedial activities.

EPA should re-examine its NPL State-lead sites to determine if these are the most cost effective mechanism for site remediation. This, most likely, will vary tremendously by individual states. The use of State-lead in NPL site remediation should be based solely on good business decisions, such as cost effectiveness, past experiences and timeliness, etc. This review of State-lead NPL responses should in no way impact the ongoing role the States and EPA enjoy in voluntary cleanups, the Brownfields program, non NPL sites and the traditional role the State plays in all NPL sites (i.e. ARARS, community relations etc).

Best Practice: In one Region, a management level team that includes the Superfund Division Director; the Assistant Regional Administrator for Policy and Management; the chiefs of the contracts, remedial, and response branches; and the contracts counsel decides how the cleanup will be conducted (contract, grant, IAG). RPMs submit a recommendation to the team, which is reviewed based on a number of criteria, including special site needs and how they should be addressed, how best to monitor the site's progress, cost, and contract capacity.

Recommendation 43: Regional senior management should be involved in selecting the cleanup mechanism (e.g. other Federal Agency, Remedial Action Contractor (RAC), or state) to ensure that funds are being managed as effectively as possible. Ways to do this include:

> **Option 1:** elevate the funding decision to senior management, possibly by using the best practice described above, or
>
> **Option 2:** develop standard operating procedures to ensure that this decision is consistently based on specific factors, including cost, contract capacity, and site needs. (Near term)

Recommendation 44: Regional management should encourage RPMs to conduct appropriate on-site oversight during construction to monitor the activities performed by contractors, other federal or state agencies. (Near term)

Recommendation 45: OSWER, OECA, and the Regions should re-examine existing policies relating to State-lead clean up. In the process an evaluation should be conducted to determine if the policy includes areas such as capability, past experience, cost and timeliness. EPA should consider if the state role should be determined using similar criteria as that used for choosing a remediation contractor or other Federal agencies. (Long term)

Recommendation 46: OSWER, OECA, and the Regions should re-examine existing state lead sites to determine if the remediation is being conducted in a timely and cost efficient manner. (Near term)

Option: OSWER should conduct a study of sites to determine where State-lead cleanups at NPL sites was very successful and transfer the lessons learned to other states and regions.

Increasing In-House Work

With the number of sites moving from RI/FS and design to construction and in light of funding constraints, some managers believe more activities should be accomplished by RPMs and other staff in the Regions, rather than by contractors. In some Regions, the Superfund program appears to have grown used to relying heavily upon contractors or other federal agencies. One issue that was raised in talking to the Regions is that when similar work is done under RCRA or in the EPA Water program, more of the work is performed in-house. Increased direct oversight of response activities by RPMs also can strengthen the RPMs' technical and managerial skills.

Recommendation 47: The Regions should evaluate options for completing all work at each site, making the fullest appropriate use of in-house capabilities, to maximize the use of contract dollars and resources and support staff professional development. (Near term)

Adopting a Multi-year Funding Plan and Funding Allocation

A number of interviewees cited the inefficiency and cost growth introduced by the uncertainty regarding available funding for ongoing projects. The inability to proceed without funding disruption from year to year—or even within the same construction season—seems to be unaddressed in the national framework for providing funding. Adopting a multi-year funding plan approach for projects would allow Regions to more fully describe their needs and allow OSWER to make more informed funding allocations. At the same time, the funding plans could be used as a tool for tracking site progress and for keeping the Regions accountable for timely results with allocated dollars. For example, OSWER would make its best effort to satisfy a funding plan once it has been agreed upon, but the Regions would have to make a renewed proposal to justify funding

beyond the initial timeline. An obvious challenge would be designing a framework that allows to the extent possible for the elements of the budget process beyond EPA's control (e.g., timing).

Another alternative to consider is providing each Region with funding for remedial actions based on multi-year needs for all remedial actions within that Region. This idea, to provide known, stable funding over the long term, was raised by numerous Regions to encourage cost efficiencies during implementation.

Option 1: To get the best price for a cleanup action, OSWER should provide Regions with a budget that funds activities over a period of years, with enough flexibility for unexpected adjustments. For remedial actions above a certain threshold, OSWER should establish a national requirement to create multi-year funding plans to guide the distributions of funds. Regional accountability for project completions should be part of these plans and schedules. (Long term)

Option 2: To maximize resources for multi-year plans and provide incentives for cost efficiencies during implementation, OSWER should consider funding the Regions one allocation for all response activities. (Long term)

Evaluating the Need for Core Cooperative Agreements (Grants)

The Agency has built state Superfund program capacity through funds provided as Core Cooperative Agreements. The Superfund program is now more than 20 years old, and the goals for continued Core funding are not entirely clear. Different states and Regions use the CORE program differently, both in the funding amounts provided and in the expectations for its use. There is no formula allocating these resources across the Regions. Although this is a difficult time for state as well as federal government funding, the question of whether the Agency is getting its money's worth for these expenditures remains very real. Also, recent Brownfields funding under Section 308 for state response programs overlaps with the authorized uses of the Core program. There appear to be large balances of Core cooperative agreement funding in some states agreements. At a national level, there needs to be a dialogue with the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) regarding the future of these agreements.

To leverage more fully the large amount of money invested in developing state capacity, some Regions work systematically with their states to identify projects that are appropriate for State-lead work or other significant state involvement. There may be benefits for all Regions to re-examine how to receive the best return on the Agency's investment in state partnerships.

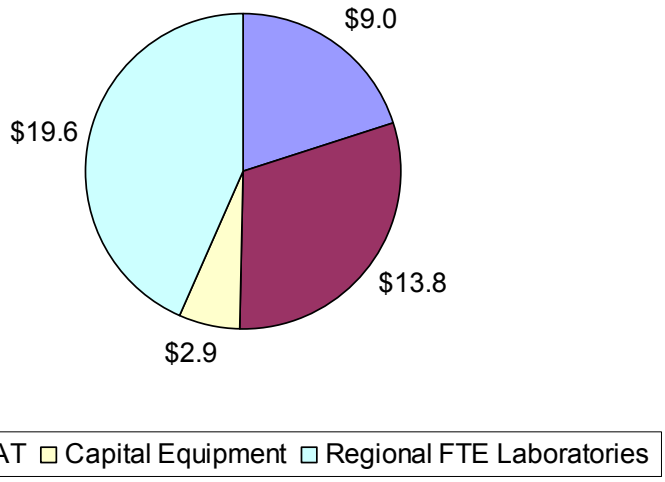
Recommendation 48: OSWER should evaluate the need, the overall funding levels, and the priorities for state cleanup programs given the Section 308 program and the original goal of the Core program to build state capacity. Working with ATSWMO and

collaborating with individual states, the Agency should communicate the goal and results of the evaluation. (Long term)

Superfund Analytical Support

Several organizations, such as the Contract Lab Program (CLP), EPA's regional laboratories, the Environmental Services Assistance Team (ESAT), Regional Response contractors, and other federal agencies, conduct laboratory analyses to support the Superfund program.

Figure 3: Breakout of Annual Average Dollars for Analytical Superfund Support* ($ in millions)

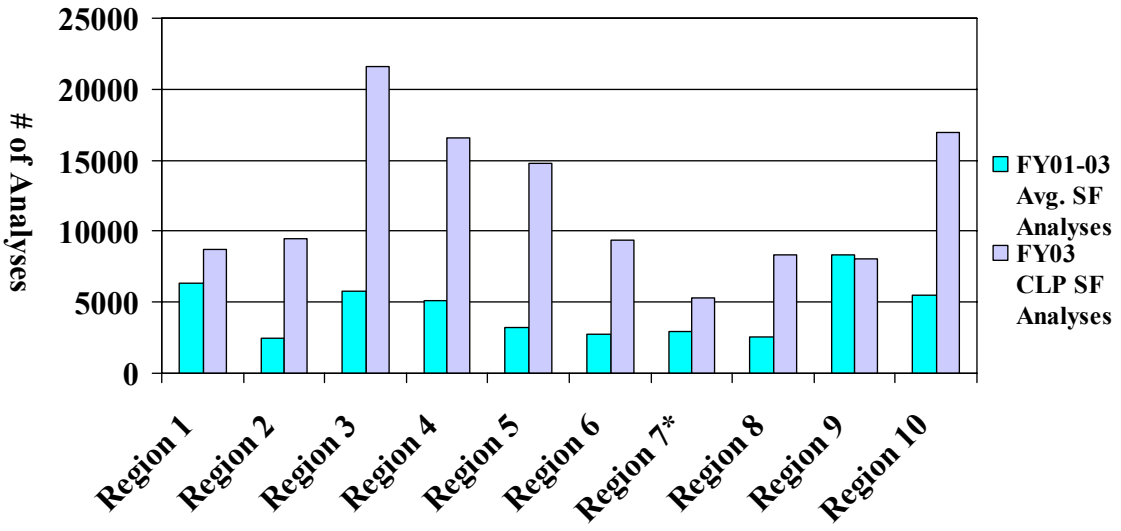


*Does not include costs for analyses conducted by RAC contractors, other federal agencies or grantees.

As illustrated in Figure 3, the Superfund program invests approximately $45 million every year in analytical support. Making the most effective use of these dollars is critical to the program. As a whole, the analytical program appears to be making good use of its overall resources, though individual Regions may have opportunities for improving the efficiency of their operations. In FY 1999, EPA headquarters and the Regions established a tiering process under the Field and Analytics Services Teaming Advisory Committee (FASTAC) to provide guidance to the Regions. Under this approach, the CLP is the preferred option for routine analytical services and, due to economies of scale, is one of the most cost-efficient and best-quality approaches for conducting analysis. The EPA regional laboratories and their support contractors, such as ESAT, are the preferred option for special analytical services that the CLP does not provide. The least cost effective options for all analytical services are the use of remedial action contracts (RACs), other federal agencies or grantees to conduct the analysis, since these options can be expensive and the laboratories receive less direct Agency oversight.

Each year, OSWER obligates approximately $9 million to support the CLP. Although the CLP labs and regional labs count analyses somewhat differently (as noted in Figure 2), these numbers together are the best indicator of the Superfund program's analytical workload. In FY 2003, the CLP supported 94,962 field analyses run in production laboratories. Figure 4 shows the number of analyses conducted in FY 2003 by the CLP and the FY01-03 average for the regional laboratories. (The numbers for the regional laboratories include samples analyzed by both EPA employees and the ESAT contractors who work in the regional laboratories.)

Figure 4: Superfund Laboratory Analyses



Definition of analysis: An analysis is one analytical test run through one instrument. The sample is run through the entire process and results are reported to the customer. Analyses include field samples (e.g. field blanks, field duplicates field spikes field controls and external performance evaluation samples). The Regional Laboratories do not include laboratory calibrations, dilutions reruns or QC (e.g. laboratory blanks, duplicates, spikes or controls). The CLP total sample analyses does include these items.

*Used FY01-02 SF data due to new lab construction

The EPA regional labs support the Superfund program by analyzing samples, conducting quality assurance, supporting field activities (field analysis to sample collection), conducting ecological and risk assessments, coordinating samples, and supporting EPA criminal investigations. From FYs 2001 through 2003, the regional laboratories conducted an average of 43,416 Superfund analyses, or 54 percent of the total analyses conducted by the Regions. The regional labs also conducted 1,734 field analyses in FY 2003, 1,600 of which supported the Superfund program.

The regional labs have approximately 470 full-time-equivalent (FTE) positions (funded by the Superfund and other programs) that perform laboratory analyses and support functions related to these analyses. In FY 2003, 42 percent (197 FTE) of the regional lab FTE was charged to the Superfund program. At the national level, these FTE charges appear to be in line with the number of Superfund analyses (54 percent) conducted by the

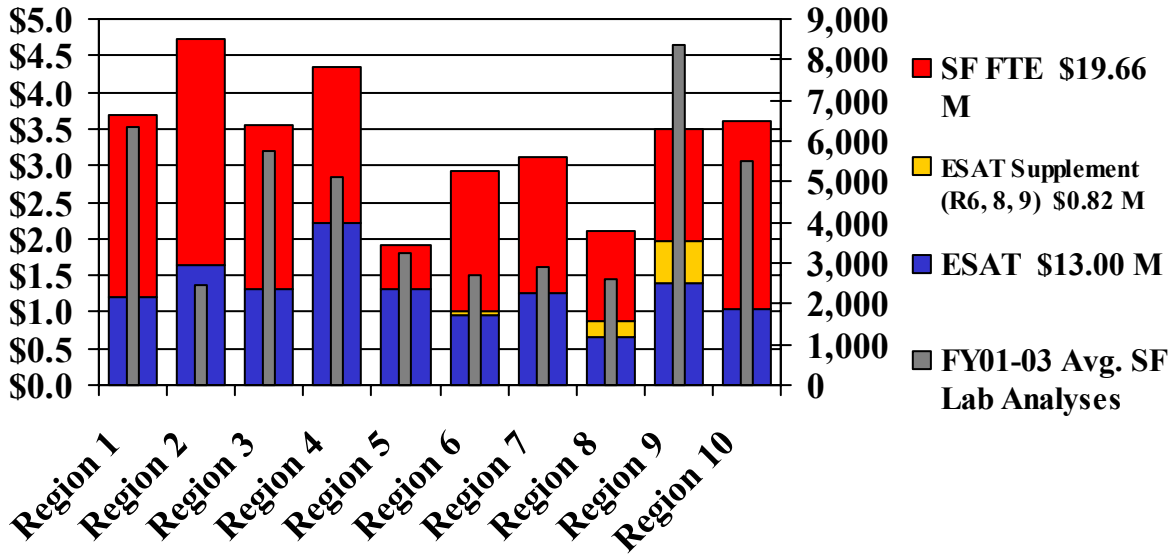
regional labs. Similarly, the Regions receive capital equipment funds from the Office of Regional Operations within the Office of the Administrator and the Office of Solid Waste and Emergency Response (OSWER). OSWER provides the regional labs with 51 percent of the capital equipment budget. Compared with the number of Superfund analyses, it appears that capital equipment costs are in proportion to funding.

Nationally, the Superfund program's FTE use looks proportionate. However, the number of FTE dedicated to laboratory analysis and support varies significantly in each Region, with a high of 31 Superfund lab FTE in Region 2 and a low of 6 in Region 5. The reasons for this variation differ across the country. One explanation for the difference is the type of analysis needed in each Region. For example, a Region that had several large dioxin sites early in the program would be expected to have more robust capabilities in this area. Some labs, in a conscious effort toward cost efficiency, have emphasized work on the most expensive type of analysis. Another factor is the level of resources available when the lab was built and staffed. Regional senior management teams have also made different choices about how to support lab activities.

Complementing EPA staff at the regional laboratories are ESAT contractors, who provide a wide variety of services, including laboratory analysis and quality assurance of sample CLP analyses. In FY 2003, OSWER provided the Regions $13 million to fund ESAT contractors. Also, three Regions have provided $820 thousand in additional ESAT support out of their own program funds.

The Regions use ESAT contractors differently. Some use them for sample analysis, and others use them for quality assurance and sample preparation only. Figure 5 compares the ESAT and FTE resources by Region to the total number of analyses.

Figure 5: FY 03 Superfund ESAT/FTE Budget Expenditures Comparison by Region with Number of Analyses ($ in Millions)



While all of the Regions use the CLP, some have stated that their needs between the CLP and ESAT vary by year. They believe that greater flexibility in the use of the funds between the two contracts would enhance the cost- effectiveness of analytical support. If greater flexibility is not possible on a yearly basis, there may be opportunities to set up a process to review ESAT and CLP regional needs every two years. Several Regions raised the issue of the high cost of analysis of PCBs and dioxin. When the current contract with the CLP expires, headquarters may want to investigate more cost-effective approaches to meeting this analytical need.

The regional laboratories have collaborated on establishing Centers of Applied Science that address the Agency's non-Superfund analytical needs. This model could be replicated in the Superfund program. This strategic use of Agency resources would ensure that Superfund program needs are addressed and would strengthen the Agency's overall analytical programs. Conceptually, this would mean that specific laboratories would specialize in analyzing specific contaminants of concern. This would avoid duplication of equipment and should reduce overall costs.

The study team interviews revealed that the Regions are not all implementing the tiering approach consistently. While the study team was unable to capture the exact number of analyses that the Regions sent to the RAC contractors, it did find that some Regions have made a conscious decision to send samples only to the CLP and their laboratory. Another Region reported that in FY 2003 its remedial project managers sent 30 percent of their samples to the Region's RAC contractors for analysis. While certain situations may warrant the use of RACs for analytical support, this use should be limited and consistent with the tiering approach.

Best Management Practices: In some Regions, the Superfund Division Director regularly meets with the Regional Science and Technology Director to develop a strategy for the Region's Superfund analytical needs. Other Regions develop memoranda of agreement between the regional cleanup division and the regional labs, which has been an effective approach. Some Regions have established a sample/analysis broker to evaluate and help choose the most appropriate approach for laboratory analysis, including where the analysis should be conducted—CLP, regional lab, etc.

Recommendation 49: The Regions should fully and consistently implement the approach proposed by the Field and Analytics Services Teaming Advisory Committee (FASTAC) for cost effective analytic support for both the remedial and removal programs. One way to do this is to establish a sample broker or liaison within the Superfund Division, whose responsibility would be to monitor the use of this approach. (Near term)

Recommendation 50: OSWER and the Regions need to have a national dialogue to pursue flexibility between resources allocated between CLP and ESAT contracts to encourage greater cost-effectiveness. (Near term)

Recommendation 51: The Superfund Division Directors and the regional laboratories should forecast the long-term analytical needs for the program, and should investigate whether the Centers of Applied Science approach would be appropriate for the program. Wherever possible, they should encourage the sharing of expertise and equipment purchases among Regions. (Long term)